

WHAT IS CLAIMED IS:

1. A wireless system, comprising:

a frequency hopping generator, the frequency hopping generator providing a frequency sequence having a short term deterministic structure, wherein the deterministic structure of the frequency sequence is in matrix form, where each row of the matrix is a vector, and all components of each vector are generated simultaneously.

2. The wireless system according to claim 1, wherein the matrix, having the plurality of vectors, is formed having a greater number of rows than columns.

3. The wireless system according to claim 1, wherein the matrix, having a plurality vectors, is formed having an equal number of rows and columns.

4. The wireless system according to claim 3, wherein the matrix columns and rows are equal to a number of frequencies available within the wireless system.

5. The wireless system according to claim 1, wherein the vectors constitute a square matrix, and each column of the matrix includes unique frequencies.

6. A method of generating a frequency sequence, the method comprising the steps of:

- obtaining a number of hop frequencies;
- obtaining a specific sequence period;
- obtaining a sequence with a given repetition distance;
- generating several frequency sequences in vector form; and
- generating a matrix including the several frequency sequences in vector form.

7. The method according to claim 6, wherein the generated matrix has an equal number of columns and rows.

8. The method according to claim 6, wherein generating a matrix generates a matrix having a plurality of columns, each column of the columns being unique and orthogonal to all other columns.

9. A method of generating frequency sequences in a wireless system for use in frequency hopping, comprising the steps of:

- obtaining a repetition distance value being greater than zero and less than a predetermined number frequencies;
- generating infinite mutual orthogonal sequences simultaneously in vector form based upon the repetition distance.

10. The method according to claim 9, further comprising the step of selecting initial vectors used in conjunction with generating the infinite mutual orthogonal sequences.